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SELECTIONS FROM THE RECORDS OF THE BOMBAY GOVERNMENT.

No. LXXVIII.—New Series.

REPORT

ON THE SUBJECT OF THE

RAIN-FALL IN THE DEKHAN,

AND THE

CLIMATIC DISTURBANCE

APPARENT DURING

1861 & 1862.

110080

Bombay:

PRINTED FOR GOVERNMENT

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1863.

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No. 302 of 1863.

PUBLIC WORKS DEPARTMENT.

To The CHIEF ENGINEER AT THE PRESIDENCY,

Bombay.

SIR,—I have the honour to forward documents as per margin, on the subject of the rain-fall in the Dekkan and the climatic disturbance apparent during the years 1861 and 1862.

Circular letter No. 209 to 215, from the Superintending Engineer for Irrigation, to Civil Surgeons, dated 29th April 1863.
Letter No. 25 dated 6th May 1863, with a Return of rain-fall from the Civil Surgeon Dhoolia.
Letter No. 33 dated 2nd May 1863, with a Return of rain-fall from the Civil Surgeon Ahmednuggur.
Return of rain-fall during 1861 and 1862, from the Civil Surgeon Poona.
Return of rain-fall from 1853 to 1862, from the Civil Surgeon Sholapoor.
Letter No. 35 dated 5th May 1863, with 2 Returns of rain-fall from the Civil Surgeon Sattara.
Return of rain-fall during 1861 and 1862, from the Civil Surgeon Belgaum.
Return of rain-fall during 1861 and 1862, from the Civil Surgeon Dharwar.

2. Appended to this letter are some brief notes on the rain-fall in each of the Collectorates of Khandesh, Ahmednuggur, Poona, Sholapoor, Sattara, Belgaum and Dharwar, in which I have endeavoured to point out the most remarkable features of each case, and I think it will be evident that the climatic disturbance is more remarkable than many who have not the rain registers in their possession are inclined to believe. In looking over the various rain-fall registers, it will be apparent that though nearly every year there is some considerable difference in the rain-fall, there are I think no two successive years in which such remarkable distinctions are evident throughout the Dekkan as 1861 and 1862. It is certainly true that though Sattara

in 1861 shows the same result as five of the other Collectorates, in 1862 it differs materially; and also that Sholapoor differs from the other Collectorates in showing a less than average rain-fall during both those years. But still these slight exceptions amidst so many corresponding results should not have too much weight attached to them. It would indeed have been most extraordinary had there not been some slight exceptions where the number of observations is so great.

3. I am not bold enough to predict a drought and famine during the present year, but I will venture so far as to say that if a conclusion is to be drawn at all from the data collected, and which is of course very imperfect for so abstruse a question, it is certain that the chances this year are in favour of a drought and famine.

4. I forward this subject for any notice you may think it deserves. I am so strongly impressed myself with the prospect of a drought, that I cannot help considering what works might be undertaken in my department to relieve the distress, and what agency I should have to employ to get several large new works suddenly commenced and carried on with all possible despatch.

5. It will be observed how much I am indebted to the Civil Surgeons at the various stations through whose kindness I have been enabled to compile the information now submitted to you.

I have the honour to be,
Sir,
Your most obedient Servant,
J. G. Fife, Captain R. E.,
Superintending Engineer for Irrigation.

Office of the Superintending Engineer for Irrigation,
Kirkee, 15th June 1863.

NOTES ON THE RAIN FALL IN KHANDESH AND THE DEKKAN, COMPILED FROM OBSERVATIONS BY THE CIVIL SURGEONS AT THE VARIOUS STATIONS.

KHANDESH.

In Khandesh the rain fall in 1861 was 23·15 inches, being the heaviest experienced since 1854 when there were 25·12 inches.

Of the 23·15 inches in 1861 about 10½ inches fell in June, 3¼ in July, 5¾ in August and 2¼ in September. This distribution may be regarded as seasonable.

In 1862 the total fall was 19·11 inches. This slightly exceeds the average of the preceding eleven years. But in 1862 the fall was unseasonable. In June, July and August only 4·44 inches, while in September, October and November there were 14·00 inches.

AHMEDNUGGUR.

At Ahmednuggur the fall in 1861 was 36·76, being the greatest fall since 1857, when 36·23 inches fell. In 1862 the fall was 27·02 inches, of which only 8 inches fell in June, July and August. In September nearly 9 inches fell, and in October 8½. The total fall in 1862 was equal to that of ordinary seasons, but it fell unseasonably. The greater part falling after the usual monsoon period had passed.

The Civil Surgeon at Ahmednuggur remarks that in Sind, where he was stationed in 1861 and 1862, he observed the same irregularity in the rain fall.

POONA.

At Poona the fall in 1861 was 46·56, being the greatest recorded since 1855, and even then the fall was only 31·05 inches. In 1861 therefore the fall was extraordinarily large. In 1862 the fall was 27·18 which though small compared to the previous year, was really

in excess of the average fall during the previous six or seven years. The average of the previous seven years comprising the extrordinary season of 1861 was 24·85 inches. The average of six years excluding 1861, was only 21·48 inches.

In 1862, though the fall was in excess of the average, there was but little rain during the regular monsoon months. In June, July and August only about 8½ inches fell. During the same period of the previous year there were nearly 25½ inches. The season of 1862 was therefore marked by a more than average fall of rain, which however fell unseasonably.

SHOLAPOOR.

At Sholapoor the fall in 1861 was 26·47. This was less than the average of the preceding eight years which was 29·20, but the fall in 1861 was seasonable, nearly 19 inches fell in June, July and August.

In 1862 the fall was 23·74. This was very far short of the average fall and it was also unseasonable. In June, July and August only about 6½ inches fell.

The fall in 1862 was the most deficient recorded since 1855 when only 13·65 inches fell. During that year only about 4¾ inches fell in June, July and August.

SATTARA.

At Sattara the fall in 1861 was 53·60 inches, being the greatest fall recorded since 1853 when 56·88 inches fell. In 1862 the fall was only 34·41 inches, but the rain fell more seasonably than in any of the Northern Collectorates.

The Civil Surgeon at Sattara makes some very interesting remarks on the subject of the rain fall. In 1861 the fall exceeded the average fall by 10·43 inches. In 1862 the fall was 8·76 inches less than the average fall. Dr. Cook however adds that these differences are not so great as those of the seasons of 1853 when the fall was 56·88, and 1855 when it was as low as 33·03 inches. The intervening

year of 1854 was however an average year, the fall having been 43·31 and this undoubtedly diminishes the apparent climatic disturbance for that period.

BELGAUM.

In 1861 the fall at Belgaum was 53·76 inches. This very greatly exceeded the fall in 1859 and 1860, which show respectively 31·51 and 27·39 only. In 1862 the fall was 47·02. This is also greatly in excess of the fall in 1859 and 1860. The difference between 1861 and 1862 was not great as regards the total fall for each year, but the periods during which the greater part of the rain fell vary in the same way as in the Northern Collectorates, though not to the same degree. In June, July and August of 1861 the fall was nearly 47¾ inches, while in 1862, during the same period, it was 30¾ inches.

DHARWAR.

In 1861 the fall at Dharwar was 33·58 inches, which exceeded the average fall. In 1862 the fall was 35·39 which was still more in excess of the average fall. In 1861 in June, July and August the fall was 25¼ inches. In the corresponding months of 1862 the fall was only 14¾ inches. The seasons of 1861 and 1862 were therefore marked at Dharwar by the same phenomena as in other places. At Dharwar it should be remarked that the rain fall is steadier than at any of the other places which have been alluded to, and this increases the value of the observations at Dharwar and the deductions drawn from them.

TABULAR STATEMENT showing in a concise form the nature of the Monsoon in the several Collectorates.

Names of Collectorates.	Monsoon of 1861.		Monsoon of 1862.	
	Unusually heavy rain fall or otherwise.	Seasonable or otherwise.	Unusually heavy rain fall or otherwise.	Seasonable or otherwise.
KHANDESH	Greatest fall since 1854.	Seasonable.	Slightly in excess of average fall of preceding eleven years.	Unseasonable.
AHMEDNUGGUR .	Greatest fall since 1855.	Seasonable.	Ordinary fall. ..	Unseasonable.
POONA	Greatest fall since 1855.	Seasonable.	Exceeds average fall.	Unseasonable.
SHOLAPOOR	Less than average fall.	Seasonable.	Less than average fall.	Unseasonable.
SATTARA	Greatest fall since 1853.	Seasonable.	Less than average fall.	Seasonable.
BELGAUM.....	Greatest fall since 1859. Records furnished do not go further back.	Seasonable.	Greatest fall since 1859. Records furnished do not go further back.	Unseasonable.
DHARWAR	Greatest fall since 1857, and exceeds average fall.	Seasonable.	Greatest fall since 1856 and greatly in excess of average fall.	Unseasonable

J. G. FIFE, Captain, R. E.,
Superintending Engineer for Irrigation.

PUBLIC WORKS DEPARTMENT.

Letter No. 209 of 1863. To the CIVIL SURGEON, Dharwar.
Do. „ 210 of „ To the CIVIL SURGEON, Belgaum.
Do. „ 211 of „ To the CIVIL SURGEON, Dhoolia.
Do. „ 212 of „ To the CIVIL SURGEON, Sattara.
Do. „ 213 of „ To the CIVIL SURGEON, Sholapoor.
Do. „ 214 of „ To the CIVIL SURGEON, Ahmednuggur.
Do. „ 215 of „ To the CIVIL SURGEON, Poona.

Sir,—I have the honour to request you will favour me with the rain fall as gauged under your supervision, from 1st January 1861 to 31st December 1862, separate for each month.

2. The late Colonel Baird Smith in his Famine Report has recorded the fact that previous to famines there is nearly always more or less climatic disturbance, and as far as my limited knowledge of the subject goes, it appears to me that such climatic disurbance has been experienced on this side of India during the past two years, and that it is not unlikely that this may terminate in a famine during the present year.

3. As far as I can ascertain from the registers it appears that the rain fall of 1861 was unusually heavy, considerably exceeding the average fall of preceding years almost wherever observations were taken and in some places exceeding the heaviest fall recorded during the preceding ten years.

4. The succeeding year of 1862 was marked by absence or extraordinary scarcity of rain at the usual season and a famine was believed to be at hand. After the usual monsoon period had passed, however, very abundant rain fell, and in several places the total fall during the year was thus brought up to beyond the average fall.

5. Whether this evident climatic disturbance will terminate in a drought and famine remains to be seen, but the subject is of such great importance generally and to my department in particular, that I am sure I need make no apology for asking you for information and for any observations that may occur to you to elucidate the question.

6. The part of the late Colonel Baird Smith's report I have alluded to will be found in the *Bombay Times' Calendar* for 1862, commencing at page 337 and paragraph 28.

I have, &c.,

(Signed) J. G. FIFE, Captain,
Superintending Engineer for Irrigation.

Office of the Superintending Engineer for Irrigation,
Kirkee, 29th April 1863.

(True Copy),
J. G. FIFE, Captain,
Superintending Engineer for Irrigation.

No. 25 OF 1863.

From Assistant Surgeon C. K. COLSTON,
Acting Civil Surgeon, Dhoolia.

To Captain FIFE, Royal Engineers,
Superintending Irrigation Engineer, Kirkee.

SIR,—In accordance with the request contained in your letter No. 211 of 1862, I have the honour to forward herewith the Dhoolia Rain Gauge Register for 1861-1862: but I am sorry that my short acquaintance with the meteorology or climate of Khandesh does not enable me to offer any prediction regarding the forthcoming season (rainy).

I have the honour to be,
Sir,
Your most obedient servant,
C. K. COLSTON,
Acting Civil Surgeon.

Dhoolia, 6th May 1863.

MEMORANDUM *of Rain fall from 1st January* 1861 *to* 31*st December* 1862.

Months.	In 1861.		In 1862.		Remarks.
	Inches.	Cents.	Inches.	Cents.	
January	..	43	..	..	
February	..	..	..	..	
March	..	..	..	..	
April	..	7	..	67	
May	..	42	..	..	
June	10	55	1	56	
July	3	24	1	78	
August	5	73	1	10	
September	2	16	9	23	
October	..	55	2	62	
November	..	..	2	15	
December	..	..	..	..	
Total	23	15	19	11	

C. K. COLSTON,
Acting Civil Surgeon.

Dhoolia, 6th May 1863.

No. 33 OF 1863.

From T. E. P. MARTIN, Esq.,
Acting Civil Surgeon, Ahmednuggur,

To the SUPERINTENDING ENGINEER for IRRIGATION, Kirkee.

SIR,—I have the honour to acknowledge the receipt of your letter No. 214 of 1863, and in compliance with your request beg to forward the rain fall for 1861-62 as registered at the Civil Hospital Ahmednuggur. The subject of your letter is so interesting and it would be of such vast importance if it were possible to determine the approach of a famine season by the observation of climatic changes, that I very much regret my want of experience prevents my adding anything to the meteorological facts you have recorded. In Sind,

where I was stationed during the two years 1861 and 1862, exactly the same unusual rain fall characterised the two monsoon seasons.

In the event of any thing occurring to me likely to help your investigation, I shall be most happy to forward it to you, but for the present can only hope that in a matter in which there must necessarily be great difficulty in collecting trustworthy data, the actual experience of the approaching season may happily disappoint your prediction.

I have the honour to be, &c.

T. E. P. MARTIN,
Acting Civil Surgeon,
Ahmednuggur.

Ahmednuggur, 2nd May 1863.

RETURN *of Rain fall at the Civil Hospital* AHMEDNUGGUR, *during the last two years commencing from the 1st January* 1861 *to the 31st December* 1862.

Months.	Years.			
	1861.		1862.	
	Inches.	Cents.	Inches.	Cents.
January	..	83	..	06
February	..	..	..	..
March	..	07	..	..
April	..	..	..	76
May	3	61	..	..
June	8	48	5	34
July	4	45	..	06
August	8	01	2	61
September	7	67	8	94
October	3	64	8	43
November	..	..	..	82
December	..	..	..	..
Total	36	76	27	2

T. E. P. MARTIN,
Acting Civil Surgeon.

Ahmednuggur Civil Hospital,
2nd May 1863.

Civil Hospital POONA *Rain Report.*

Months.	Total fall of Rain for			
	1861.		1862.	
	Inches.	Cents.	Inches.	Cents.
January	..	..	..	..
February.....	..	..	..	..
March.....	..	60	..	..
April	..	30	..	40
May	..	57	..	..
June	6	13	. 4	60
July.....	16	57	1	39
August	8	22	2	44
September	7	61	9	18
October	6	56	8	89
November	..	..	..	28
December	..	..	..	..
Total....	46	56	27	18

G. G. W. MAITLAND,
Civil Surgeon.

Poona, 20th May 1863.

REGISTER *of Rain fall in the Town of* SHOLAPOOR, *during each month, from the year* 1853 *to* 1862 *inclusive.*

MONTHS.	1853.		1854.		1855.		1856.		1857.		1858.		1859.		1860.		1861.		1862.	
	Inch.	Cents	Inch.	Cents	Inch.	Cents	Inch.	Cents	Inch.	Cents	Inch.	Cents	Inch.	Cents	Inch.	Cents	Inch.	Cents	Inch.	Cents
January	..	..	..	..	..	..	..	..	..	06	..	..	..	..	..	..	..	88	..	13
February	..	09	..	..	..	33	..	..	..	06	..	11	..	..	..	..	..	..	..	..
March.....	..	60	..	..	..	47	..	92	..	37	..	03	..	05	..	..	..	10	..	..
April	1	17	..	..	..	10	..	20	..	31	1	17	7	58	..	79	..	48	..	83
May	..	36	1	12	..	02	5	55	6	78	1	67	1	07	..	..	1	25	..	04
June	3	43	2	60	3	86	4	52	3	86	5	21	1	72	13	29	8	48	2	52
July	..	..	7	56	..	55	1	41	3	86	4	61	3	86	6	79	3	36	..	58
August	11	23	3	81	..	38	7	96	1	14	1	53	8	37	..	95	6	79	3	55
September	4	87	8	25	2	14	..	89	10	09	9	92	6	56	8	12	3	18	12	50
October	..	20	6	46	5	80	2	21	3	01	6	79	4	12	3	13	1	95	2	70
November	3	80	..	58	..	..	..	07	4	66	2	46	..	..	..	..	..	..	..	89
December	..	..	1	20	..	..	..	04	..	..	..	..	..	..	..	..	..	..	..	..
Total..	30	56	31	58	13	65	23	77	34	14	33	50	33	33	33	7	26	47	23	74

F. W. HARRIS,
Officiating Civil Surgeon.

Sholapoor, 4th May 1863.

No. 35 of 1863.

From the Civil Surgeon, Sattara,
To the Superintending Engineer for Irrigation.

Sir,—In accordance with the request contained in your letter No. 212, dated 29th April 1863, I have the honour to foward a return of the Rain fall registered in Sattara for the years 1861 and 1862.

2. The average Rain fall for the nine years preceding 1861, *i. e.* from 1852 to 1860 inclusive, amounted to 43 inches 17 cents. The return for the year 1851 shows so small an amount (26 inches 27 cents) that I am unwilling to include it in the average, as I imagine that it is from some cause untrustworthy.

3. Contrasting the two years under consideration with the average thus deduced, we find that the fall for 1861 exceeded the average by 10 inches 43 cents, and that for the year 1862 was less than the average by 8 inches 76 cents. The difference between the two years reached 19 inches 19 cents.

4. Irregularities equal to these have occurred in the preceding nine years without going on to produce the climax of a famine. Thus the Rain fall for the year 1853 exceeded the average by 13 inches 71 cents, and that for 1852 by 8 inches, while the fall recorded for the year 1855 fell 10 inches 14 cents below the average.

5. The two years preceding 1861 were remarkably equal and presented little or no deviation from the average. Colonel Baird Smith in the passage quoted by you would seem to point out that the climatic disturbances could be traced back for four or more years before they resulted in the dreaded climax.

6. It may be that the sum of nine years is too small a period from which to deduce a fair average, and that therefore the data I have to give may be of little or no moment.

7. It would be very far from my wish or intention to try to prove that the result you deem likely to be imminent is not in the

least foreshadowed by the climatic disturbances to which you have called attention, but on consideration of the data (meagre as they are) at my disposal, it does not appear to me that such a conclusion is altogether warranted.

8. I have the honour to attach a statement of the Rain fall for the period quoted by me, viz. from 1852 to 1860 inclusive.

I hav the honour to be,
Sir,
Your most obedent Servant,
HENRY COOK, M. D.,
Civil Surgeon.

Sattara, 5th May 1863.

STATEMENT *of the fall of Rain registered at* SATTARA *for the years* 1861 *and* 1862.

Months.	For the year 1861.		For the year 1862.	
	Inches.	Cents.	Inches.	Cents.
January	..	06	..	33
February.....	..	..	..	..
March.....	..	..	..	..
April	..	62	..	10
May	2	95	..	01
June	2	13	5	45
July.....	21	..	9	86
August	19	86	7	57
September	3	21	5	99
October	3	77	4	46
November	..	..	..	64
December	..	..	..	..
Total....	53	60	34	41

HENRY COOK, M. D.,
Civil Surgeon.

SATEMENT *of the fall of Rain registered at* SATTARA, *for nine years, from* 1852 *to* 1860 *inclusive.*

Years.	Amount of Rain.	
	Inches.	Cents.
For the year 1852	51	13
„ 1853	56	88
„ 1854	46	31
„ 1855	33	03
„ 1856	35	70
„ 1857	47	22
„ 1858	34	08
„ 1859	41	04½
„ 1860	43	18
Total.....	388	57½
Mean.....	43	17

HENRY COOK, M. D.,
Civil Surgeon.

RETURN *of the fall of Rain at* BELGAUM

1861.

MONTHS.	Inches.	Cents.	Remarks for each month.
January	..	38	Winds S. Westerly and Easterly.
February	..	..	Easterly with occasional sea breeze in the evening.
March	..	70	Winds S. Westerly and Easterly.
April	..	52	South Westerly and Easterly ; mornings cool, days hot and oppressive ; thunder storms towards the end of the month.
May.....	..	41	S. Westerly and occasionally Easterly ; weather hot and dry during the day ; morning cool.
June.....	5	2	Weather unusually dry in the early part of the month, and fall of rain scanty.
July.....	18	50	South Westerly. Wet.

during the years 1861 *and* 1862.

1862.			
MONTHS.	Inches.	Cents.	Remarks for each month.
January	..	5	The land winds have been almost constant and very trying. The early part of the month was rather cloudy and 5 cents. of rain were registered. There was also some thunder and lightning.
February....	..	..	The weather has been variable, cloudy about the middle of the month and latterly becoming very hot. Wind generally Easterly during early morning, S. W. during the day.
March.....	..	93	The Thermometer at noon has ranged from 80° to 86° ; and the heat has been felt to be unusually oppressive, but the nights have been tolerably cool. There has been sea breeze for a few hours generally setting in from 2 to 3 P. M. Since about the 12th the afternoons have clouded in and we have had severe thunder storms but little rain to speak of. Towards, the end of the month eletrical disturbances have become very frequent and on the evening of the 28th there was an abuost continuous display of sheet lightning.
April	..	66	The Thermometer at noon has ranged from 82° to 89°. The weather has been oppressively hot and close during the day. There has been frequent lightning and thunder with very little rain, but though the mango showers have not fallen as usual, yet the sky has been clouded, aud the atmosphere moist and the grass is looking green.
May	1	50	Days generally hot, but with sea breeze setting in a little after 2 P. M. ; evenings refreshing and nights cool. Thunder storms occasionally, but the rain which has fallen has been inconsiderable. The atmosphere however is moist and the country and plaius have begun to look green.
June	15	85	Occasional storms of thunder and rain from N. W. up to the evening of the 8th, when the S. W. Monsoon set in and continued steadily till the evening of the 12th, when a break commenced, which with occasional squalls lasted till the 27th, when the clouds came up again from the S. W. Altogether 15 inches and 85 cents.
July.....	6	28	The first part of the month was showery ; towards the middle squally with heavy showers, and latterly the temperature has been cool, almost chilly with the wind more from the N. W.

1861.

Months.	Inches.	Cents.	Remarks for each month.
August	24	11	Winds S. West.
September ..	2	16	Prevailing Winds S. W. Weather generally fine.
October	1	66	A fine month. At the close Easterly winds beginning to set in.
November ..	..	30	The weather was cloudy about the middle of the month and 30 cents of rain fell in sudden showers on the 13th and 14th. We have had a fair amount of sea breeze, but the land wind has on the whole prevailed.
December ..	..	..	Mornings and evenings cold with fresh North Easterly winds ; sea breeze moderate.
Total..	53	76	

Belgaum, 31*st May* 1863.

1862.

Months.	Inches.	Cents.	Remarks for each month.
August	,8	61	In the beginning of the month the atmosphere was damp and cloudy, with generally some sunshine daily; towards the middle chilly with frequent rain. There has been a break with heavy dews since the 20th. Winds S. W, West and N. W.
September ..	. 5	50	First part of the month wind light from W. and S. W. with clouds breaking up at night in S. W. Lightning and thunder with rain on the 5th and 6th. 5½ inches registered during the month. Break on 23rd and 24th.
October	6	44	Lightning and thunder nearly all the month. Heavy showers on the 18th, 21st and 22nd from N. E., latterly a steady East wind has set in with heavy dews.
November ..	..	35	In the commencement of the month there was a dry Easterly air without much wind, and there were heavy dews nightly. A sudden momentary shower fell at 9-30 P. M. of the 14th but not enough to register. On the 21st the wind inclined from Westward and gentle rain, 12 cents, fell during the evening and the weather was cloudy, but the last two days it has been clear.
December....	..	85	There has been a prevalence of sharp cold Easterly wind perceptible through the day. The afternoons of the 24th, 25th and 26th were cloudy with lightning in the East and from 5 P. M. on the latter day several showers fell and 85 cents of rain were registered.
Total .	47	2	

C. G. Ross, Assistant Surgeon,
Acting Civil Surgeon.

Fall of Rain at DHARWAR *from the* 1*st January* 1861 *to the* 31*st December* 1862.

	1861.		1862.	
	Inches.	Cents.	Inches.	Cents.
January	..	..	..	25
February	..	..	..	..
March	..	..	..	93
April	..	81	1	59
May	2	17	1	73
June	3	74	6	67
July	9	10	3	42
August	12	36	4	56
September	3	45	4	42
October	1	60	10	30
November	..	35	1	45
December	..	..	..	7
Total..	33	58	35	39

E. H. R. LANGLEY,
Acting Civil Surgeon.

Dharwar, 7th May 1863.

No. 3180 OF 1863

PUBLIC WORKS DEPARTMENT.

Submitted to the Secretary Public Works Department for the information and consideration of Government.

2. In many parts of India there was unusually hot weather at the end of April and in May 1863, and unusual heat is frequently followed by a plentiful rain-fall during the South West monsoon. The reason is obvious, for as the South West monsoon is caused by

the heated air rising over the vast continent of India, and admitting the cool, vapour-laden breezes, from the Indian Ocean, so any thing which increases this action (more particularly unusually hot weather) produces a large rain-fall during the South West monsoon.

3. The South West monsoon has set in favourably, and not too early, which is a great advantage; I hope that the gloomy anticipation of Captan Fife may not be realized, but it will be better that he should sketch out one or more large works in each of the Collectorates (particularly in the eastern ones where drought is more apt to cause distress), so that famine relief works may be commenced if necessary, to the advantage of Government as well as to the relief of the starving poor.

GORE MUNBEE, Colonel, R. E.,
Officiating Chief Engineer at the Presidency.

Office of Chief Engineer at the Presidency,
Bombay, 24th June 1863.

RESOLUTION of Government, No. 1342, dated 11th July 1863:—

"Government are of opinion that it would be advisable that Captain Fife should be prepared with Famine Works in case of need."

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on 08 January, 2019